

## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

**Greg Denton** 

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley

TDEC-WPC Knoxville FO

3711 Middlebrook Pike

Knoxville, TN 37921

K00003205 Lab ID:

Knoxville Regional Laboratory

Sampling Agency: TDEC: Division of Water Pollution Control

**Billing Code:** 

327.34-20

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00003205001

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 12.1

Sampler Project Name: TVA ash spill **Project Site No.:** 

Station No.:

Date/Time Collected:

EMORY012.1RO

Sampler's Name:

12/10/2009 11:20 Geoff Klein

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.32

pH Units

Chlorine, residual:

Conductivity:

36

uMHO

Temperature: Dissolved Oxygen: 14.41

7.82

mg/L

Other:

Flow:

TEST: Digestion Metals	MET					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009		*** ** *** ** ** **		M Pattanayek	12/15/2009

TEST: ICP METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron -	380	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME	ΓHOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	300	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	21	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.58J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	U	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	0.55J	μg/L	0.10	1.	M Pattanayek	12/15/2009
Manganese	· 61	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.3	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.12J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	4.5J	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205001

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 12.1

Sampler Project Name: TVA ash spill **Project Site No.:** 

Station No.:

Date/Time Collected:

EMORY012.1RO

Sampler's Name:

12/10/2009 11:20

County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville

**Billing Code:** Send Report To: **TDEC-WPC** 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

:Hq

7.32

pH Units

Chlorine, residual:

Conductivity:

36

uMHO

Temperature:

7.82

Dissolved Oxygen: 14.41

mg/L

Other:

Flow:

CFS

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003205002

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 2.1

Sampler Project Name: TVA ash spill

**Project Site No.:** 

**Station No.:** 

EMORY002.1

Date/Time Collected:

12/10/2009 09:54

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville

**Billing Code:** Send Report To: TDEC-WPC 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.52

pH Units

Chlorine, residual:

Conductivity:

31

uMHO

Temperature:

9.04

Dissolved Oxygen: 11.68

mg/L

Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	410	μg/L.	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	320	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	23	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.58J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	U	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	0.70J	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	59	μg/L.	0.42	1	M Pattanayek	12/15/2009
Nickel	1.4	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.064J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	· 3.8J	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205002

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 2.1

Sampler Project Name: TVA ash spill

**Project Site No.:** Station No.:

EMORY002.1

**Date/Time Collected:** 

12/10/2009 09:54

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville TDEC-WPC

**Billing Code:** Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC 12/30/2009

**Priority Date:** Date/Time Received:

12/10/2009 12:54

Received By:

TEST: Mercury (

ANALYTE

Mercury

Ken Hitchman

METHOD: EPA 245.1

**RESULT** UNITS

U μg/L

MDL MQL **ANALYZED BY:** 0.2 0.029 M Pattanayek

**Field Determinations** 

Dissolved Oxygen: 11.68

Chlorine, residual:

Conductivity:

Temperature:

7.52

9.04

31

:Hq

Other:

Flow:

DATE 12/15/2009

pH Units

uMHO

mg/L

CFS

J - Estimated value between MDL and MQL

MDL - Method Detection Limit MQL - Method Quantitation Limit

K00003205003

**Project Name:** 

TVA-Ash Spill

Sample Description:

Approx 100' downstream from middle dredge pc Chlorine, residual:

Project Site No.:

Sampler Project Name: TVA ash spill

Ctotion No.

2A

Station No.:
Date/Time Collected:

Dredge Plume 12/10/2009 10:01

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency:

Knoxville TDEC-WPC 327.34-20

Billing Code: Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

**Priority Date:** 

Ken Hitchman

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT UNITS MDL MQL ANALYZED					Y: DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

**Field Determinations** 

Dissolved Oxygen: 11.85

Conductivity:

Temperature:

7.27

31

9.05

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

TEST: ICP	METHOD: EPA 200.7					
ANALYTE	RESULT	UNITS	MQL	ANALYZED BY:	DATE	
Iron	600	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME	THOD: EPA 20	0.8		·	
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	490	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	28	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	0.11J	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	. 0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.91J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	0.52J	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	1.1	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	93	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	. M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.060J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	6.0	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205003

**Project Name:** 

TVA-Ash Spill

Sample Description:

Approx 100' downstream from middle dredge pc Chlorine, residual:

**Field Determinations** 

Dissolved Oxygen: 11.85

Conductivity: Temperature: 7.27

31

9.05

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

Sampler Project Name: TVA ash spill

**Project Site No.:** 

2A

Station No.:

Dredge Plume

Date/Time Collected:

12/10/2009 10:01

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency: Billing Code:

TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009

12:54

Received By:

Ken Hitchman

TEST: Mercury	Mercury METHOD: EPA 245.1					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

**MQL - Method Quantitation Limit** 

K00003205004

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

Sampler Project Name: TVA ash spill

**Project Site No.:** 

2B

Station No.:

EMORY001.9RO

Date/Time Collected:

10:07 12/10/2009

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency: Billing Code:

Knoxville TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.16

pH Units

Chlorine, residual:

Conductivity:

31

uMHO

Temperature: Dissolved Oxygen: 11.75

9.00

mg/L

Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

TEST: ICP	ME	ΓHOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	530	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	WE.	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	410	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	Ū	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	25	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1 .	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.80J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	U	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	0.92J	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	78	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.041J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	7.9	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205004

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

10:07

Sampler Project Name: TVA ash spill

**Project Site No.:** 

2B

Station No.:

EMORY001.9RO

Date/Time Collected:

12/10/2009

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

**TEST: Mercury** 

Ken Hitchman

METH	IOD: E	PA 2	45.1

**Field Determinations** 

Dissolved Oxygen: 11.75

Chlorine, residual:

Conductivity:

Temperature:

7.16

9.00

31

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit MQL - Method Quantitation Limit

K00003205005

**Project Name:** Sample Description:

TVA-Ash Spill Emory River mile 1.7

Sampler Project Name: TVA ash spill

Date/Time Collected:

**Project Site No.:** 

Station No.:

EMORY001.7RO 12/10/2009 10:13

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73 Water

EFO: Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

6.97

pH Units

uMHO

Chlorine, residual:

Conductivity:

31

8.99

Temperature: Dissolved Oxygen: 12.21

mg/L

Other:

Flow:

TEST: Digestion Metals	MET	HOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

TEST: ICP	MET	ΓHOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	620	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	550	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	27	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.78J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	0.57J	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	1.0	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	73	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.041J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	5.8	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205005

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA ash spill

**Project Site No.:** 

Station No.:

EMORY001.7RO

**Date/Time Collected:** 

12/10/2009 10:13

Sampler's Name: County:

Geoff Klein ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code:** Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

12/30/2009

Date/Time Received:

12/10/2009 12:54

U

Received By:

TEST: Mercury

ANALYTE

Mercury

Ken Hitchman

MET	HOD: EPA 24	5.1 -			
RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE

0.029

μg/L

0.2

J - Estimated value between MDL and MQL MDL - Method Detection Limit MQL - Method Quantitation Limit

U - Undetected

**Field Determinations** 

:Hq

6.97

pH Units

**uMHO** 

Chlorine, residual: Temperature:

Conductivity:

31

8.99 Dissolved Oxygen: 12.21

M Pattanayek

mg/L

Other:

Flow:

CFS

12/15/2009

K00003205006

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA ash spill

Project Site No.:

**Station No.:** 

EMORY000.1RO

Date/Time Collected:

12/10/2009 10:24

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville TDEC-WPC 327.34-20

Billing Code: Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC 12/30/2009

**Priority Date:** Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

:Hq

7.08

pH Units

Chlorine, residual:

Conductivity:

31

uMHO

Temperature:

9.00 Dissolved Oxygen: 12.31

mg/L

Other:

Flow:

TEST: Digestion Metals	MET	HOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

TEST: ICP	MET	ΓHOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	520	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	430	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	25	μg/L	2.5	- 5	M Pattanayek	12/15/2009
Beryllium	Ŭ	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.70J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	0.40J	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	0.91J	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	68	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.033J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	4.9J	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205006

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 0.1

**Project Site No.:** 

Sampler Project Name: TVA ash spill

**Station No.:** 

EMORY000.1RO

**Date/Time Collected:** Sampler's Name:

12/10/2009 10:24 Geoff Klein

County:

ROANE - 73

Sample Matrix: EFO:

Water Knoxville

Sampling Agency: Billing Code: Send Report To:

TDEC-WPC 327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:** 

12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 7.08 pH Units pH: Chlorine, residual: uMHO

31 Conductivity:

Temperature: 9.00 Dissolved Oxygen: 12.31

mg/L

Other: Flow:

**CFS** 

TEST: Mercury	MET	ΓHOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit MQL - Method Quantitation Limit

K00003205007

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River mile 2.3

Sampler Project Name: TVA ash spill

Project Site No.:

5

Station No.:

CLINC002.3RO

Date/Time Collected: Sampler's Name:

12/10/2009 10:50

County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency: **Billing Code:** 

TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

Dissolved Oxygen: 12.60

pH:

7.33

pH Units

Chlorine, residual:

Conductivity: Temperature: 106

9.61

uMHO mg/L

Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009	

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	510	μg/L	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	ME <sup>-</sup>	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	370	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	1.0J	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	31	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.71J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	0.61J	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	1.0	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	81	μg/L.	0.42	1	M Pattanayek	12/15/2009
Nickel	1.5	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.032J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	4.2J	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205007

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River mile 2.3

Sampler Project Name: TVA ash spill

Project Site No.: **Station No.:** 

CLINC002.3RO

**Date/Time Collected:** 

12/10/2009 10:50 Geoff Klein

Sampler's Name: County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:** 

TDEC-WPC TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.33

pH Units

uMHO

Chlorine, residual:

Conductivity:

106

Temperature: 9.61 Dissolved Oxygen: 12.60

mg/L

Other:

Flow:

CFS

TEST: Mercury	ME.	THOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009

J - Estimated value between MDL and MQL MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003205008

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River TVA Discharge Point

Sampler Project Name: TVA ash spill

**Project Site No.:** Station No.:

5A

KingAshOutF2

Date/Time Collected: Sampler's Name:

12/10/2009 10:58 Geoff Klein

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

Billing Code: Send Report To: TDEC-WPC 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 7.38 pH:

Chlorine, residual:

Conductivity:

52

pH Units

7.58

uMHO

mg/L

Temperature: Dissolved Oxygen: 13.22

Other:

Flow:

TEST: Digestion Metals	MET	HOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009

TEST: ICP	ME.					
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Iron	1100	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME.	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	1600	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	0.80J	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	11	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	68	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	0.39J	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	2.1J	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	1.4	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	5.1	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	2.9	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	110	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	2.8	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	0.22J	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	. 11	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	6.7	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205008

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River TVA Discharge Point

Sampler Project Name: TVA ash spill

Project Site No.:

5A

**Station No.:** 

KingAshOutF2

Date/Time Collected:

12/10/2009 10:58

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: TDEC-WPC TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

**Priority Date:** 

Ken Hitchman

**Field Determinations** 

:Hq

7:38

pH Units

uMHO

Chlorine, residual:

Conductivity: Temperature:

52

7.58

Dissolved Oxygen: 13.22

mg/L

Other:

Flow:

CFS

TEST: Mercury	WE					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

MQL - Method Quantitation Limit

K00003205009

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.:

CLINC004.5RO

Date/Time Collected:

12/10/2009 10:31

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO: Sampling Agency: Water Knoxville

**Billing Code:** Send Report To: Agency Invoiced: TDEC-WPC 327.34-20 **TDEC-WPC** TDEC-WPC 12/30/2009

**Priority Date:** Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 7.40

pH:

175 Conductivity: Temperature: 10.06

Dissolved Oxygen: 11.34

Other: Flow:

**CFS** 

pH Units

**uMHO** 

mg/L

TEST: Digestion Metals	METHOD: EPA 200.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Digestion Metals	12/15/2009				M Pattanayek	12/15/2009	

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	440	μg/L	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	MET	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	230	μg/L	6.4	10	M Pattanayek	12/15/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/15/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/15/2009
Barium	33	μg/L	2.5	5	M Pattanayek	12/15/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/15/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/15/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/15/2009
Cobalt	0.72J	μg/L	0.04	1	M Pattanayek	12/15/2009
Copper	0.41J	μg/L	0.38	1	M Pattanayek	12/15/2009
Lead	1.0	μg/L	0.10	1	M Pattanayek	12/15/2009
Manganese	110	μg/L	0.42	1	M Pattanayek	12/15/2009
Nickel	1.5	μg/L	0.25	1	M Pattanayek	12/15/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/15/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/15/2009
Thallium	U	μg/L	0.03	1	M Pattanayek	12/15/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/15/2009
Zinc	5.1	μg/L	1.9	5	M Pattanayek	12/15/2009

K00003205009

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

**Field Determinations** 

Dissolved Oxygen: 11.34

Conductivity:

Temperature:

:Hq

Other:

Flow:

7.40

175

10.06

pH Units

**uMHO** 

mg/L

**CFS** 

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.:

CLINC004.5RO

Date/Time Collected:

12/10/2009 10:31

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC 327.34-20

**Billing Code:** Send Report To: Agency Invoiced:

**TDEC-WPC** TDEC-WPC 12/30/2009

Date/Time Received:

12/10/2009 12:54

Received By:

**Priority Date:** 

Ken Hitchman

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/15/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

**MQL - Method Quantitation Limit** 



## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

K00003205

Knoxville Regional Laboratory

Lab ID:

Sent To:

**Greg Denton** 

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley TDEC-WPC

Knoxville FO

3711 Middlebrook Pike

Knoxville, TN 37921

Sampling Agency: TDEC: Division of Water Pollution Control

**Billing Code:** 327.34-20

> This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

> > Analytical Supervisor

K00003205001

Project Name:

TVA-Ash Spill

Sample Description:

Transi Opiii

Sampler Project Name: TVA ash spill

Emory River mile 12.1

Project Site No.:

1

Station No.:

EMORY012.1RO

Date/Time Collected:

12/10/2009 11:20

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency: Billing Code:

Knoxville TDEC-WPC

Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

**ANALYTE** 

Ken Hitchman

TEST: Alkalinity To	fal	METHOD: EDA 310 2		
-			·	
			•	
Received by:	Ken Hilchman		•	

UNITS

**Field Determinations** 

Dissolved Oxygen: 14.41

MQL

Chlorine, residual:

Conductivity:

Temperature:

7.32

36

7.82

ANALYZED BY:

pH Units

uMHQ

mg/L

**CFS** 

pH:

Other:

Flow:

MDL

Total Alkalinity	10	mg/L	3.8	10	M Chen	12/15/2009
			~			

**RESULT** 

TEST: Hardness, Calcium	ME'						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Calcium hardness	14	mg/L	0.7	1	M Chen	12/14/2009	

TEST: Residue, Settleable	METHOD: SM 2540F						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009	

TEST: Residue, Suspended METHOD: SM 2540D							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Suspended Solids	26	mg/L	10	10	A Peeples	12/11/2009	

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205002

**Project Name:** 

TVA-Ash Spill

Sample Description:

Sampler Project Name: TVA ash spill

Emory River mile 2.1

**Project Site No.:** 

2

Station No.:

**EMORY002.1** 

**Date/Time Collected:** 

12/10/2009 09:54

Sampler's Name:

Geoff Klein

County:

**ROANE - 73** 

Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency: **Billing Code:** 

TDEC-WPC

Send Report To:

327.34-20 TDEC-WPC

Agency Invoiced:

TDEC-WPC 12/20/2009

**Priority Date:** Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.52

pH Units

Chlorine, residual:

Conductivity:

31

**uMHO** 

Temperature:

9.04 **Dissolved Oxygen: 11.68** 

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ity, Total METHOD: EPA 310.2						
ANALYTE	RESULT UNITS MDL		MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	10	mg/L	3.8	10	M Chen	12/15/2009	

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Calcium hardness	9.8	mg/L	0.7	1	M Chen	12/14/2009	

TEST: Residue, Settleable METHOD: SM 2540F							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009	

TEST: Residue, Suspended	METHOD: SM 2540D					•
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	35	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205003

**Project Name:** 

Sample Description:

TVA-Ash Spill

Approx 100' downstream from middle dredge pc Chlorine, residual:

**Field Determinations** 

**Dissolved Oxygen: 11.85** 

Conductivity:

Temperature:

7.27

31

9.05

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

Sampler Project Name: TVA ash spill

**Project Site No.:** 2A

Station No.:

Dredge Plume

**Date/Time Collected:** 

12/10/2009 10:01

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville

**Billing Code:** Send Report To: TDEC-WPC 327.34-20

Agency Invoiced:

TDEC-WPC TDEC-WPC

**Priority Date:** Date/Time Received: 12/20/2009 12/10/2009 12:54

Received By:

Ken Hitchman

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	10	mg/L	3.8	10	M Chen	12/15/2009	

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Calcium hardness	9.6	mg/L	0.7	1	M Chen	12/14/2009	

TEST: Residue, Settleable	tesidue, Settleable METHOD: SM 2540F							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Settleable Residue	0.2	ml/L	0.10	0.10	P Leathers	12/11/2009		

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	62	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205004

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

Sampler Project Name: TVA ash spill

**Project Site No.:** 

**Station No.:** 

EMORY001.9RO

**Date/Time Collected:** Sampler's Name:

12/10/2009 10:07

County:

Geoff Klein

Sample Matrix:

**ROANE - 73** 

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code: Send Report To:**  327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.16

pH Units

Chlorine, residual:

Conductivity:

31

uMHO

Temperature:

9.00

**Dissolved Oxygen: 11.75** 

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT UNITS MDL MQL ANALYZED					Y: DATE	
Total Alkalinity	10	mg/L	3.8	10	M Chen	12/15/2009	

TEST: Hardness, Calcium ´	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	8.8	mg/L	0.7	1 .	M Chen	12/14/2009

TEST: Residue, Settleable	ME.	THOD: SM 254	0F			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	0.1	mi/L	0.10	0.10	P Leathers	12/11/2009

TEST: Residue, Suspended METHOD: SM 2540D						
ANALYTE	RESULT	ANALYZED BY:	BY: DATE			
Total Suspended Solids	53	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205005

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA ash spill

**Project Site No.:** 

3

**Station No.:** 

EMORY001.7RO

Date/Time Collected: Sampler's Name:

12/10/2009 10:13

County:

Geoff Klein ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-WPC

Send Report To: **Agency Invoiced:**  327.34-20 TDEC-WPC

**Priority Date:** 

TDEC-WPC 12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

pH:	6.97	pH Units
Chlorine, residual:		
Conductivity:	31	uMHO

Temperature:

8.99

mg/L

Dissolved Oxygen: 12.21

**Field Determinations** 

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME.	THOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	10	mg/L	3.8	10	M Chen	12/15/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	9.6	mg/L	0.7	1	M Chen	12/14/2009

TEST: Residue, Settleable	METHOD: SM 2540F					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	45	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205006

**Project Name:** 

TVA-Ash Spill

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA ash spill

**Project Site No.:** 

Station No.:

EMORY000.1RO

**Date/Time Collected:** 

12/10/2009 10:24

Sampler's Name:

Geoff Klein

County: Sample Matrix: **ROANE - 73** 

EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-WPC

Send Report To: Agency Invoiced: 327.34-20 **TDEC-WPC** TDEC-WPC

**Priority Date:** 

12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** :Hq 7.08

Chlorine, residual:

Conductivity:

31 uMHO

pH Units

mg/L

Temperature: 9.00

Dissolved Oxygen: 12.31

Other:

Flow: CFS

TEST: Alkalinity, Total	METHOD: EPA 310.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	9.9J	mg/L	3.8	10	M Chen	12/15/2009

TEST: Hardness, Calcium	ME	THOD: SM 350	0-Ca D		ı	
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	10	mg/L	0.7	1	M Chen	12/14/2009

TEST: Residue, Settleable	MET	THOD: SM 254					
ANALYTE	RESULT	UNITS MDI		MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009	

TEST: Residue, Suspended METHOD: SM 2540D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	45	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205007

**Project Name:** 

TVA-Ash Spill

Sample Description:

Clinch River mile 2.3

Sampler Project Name: TVA ash spill

**Project Site No.:** 

5

**Station No.:** 

CLINC002.3RO

**Date/Time Collected:** 

12/10/2009 10:50

Sampler's Name: County:

Geoff Klein

Sample Matrix:

**ROANE - 73** 

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code:** Send Report To: 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC 12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

pH:

7.33

pH Units

Chlorine, residual:

Conductivity:

106

**uMHO** 

Temperature:

9.61 Dissolved Oxygen: 12.60

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	55	mg/L	3.8	10	M Chen	12/15/2009	

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	56	mg/L	0.7	1	M Chen	12/14/2009

TEST: Residue, Settleable	METHOD: SM 2540F					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009

TEST: Residue, Suspended	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	53	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205008

**Project Name:** 

TVA-Ash Spill

Sample Description:

Sampler Project Name: TVA ash spill

Clinch River TVA Discharge Point

**Project Site No.:** 

5A

**Station No.:** 

KingAshOutF2

Date/Time Collected:

Sampler's Name:

12/10/2009 10:58

County:

Geoff Klein **ROANE - 73** 

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

**Billing Code:** 

TDEC-WPC 327.34-20

**Send Report To: Agency Invoiced:** 

TDEC-WPC TDEC-WPC

**Priority Date:** 

12/20/2009

Date/Time Received:

12/10/2009 12:54

Received By:

Ken Hitchman

**Field Determinations** 

:Hq

7.38

pH Units

Chlorine, residual:

Conductivity:

52

**uMHO** 

Temperature: Dissolved Oxygen: 13.22

7.58

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME	THOD: EPA 31		<del></del>		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	19	mg/L	3.8	10	M Chen	12/15/2009

TEST: Hardness, Calcium	ium METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	20	mg/L	0.7	1	M Chen	12/14/2009

TEST: Residue, Settleable METHOD: SM 2540F							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009	

TEST: Residue, Suspended	METHOD: SM 2540D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Suspended Solids	98	mg/L	10	10	A Peeples	12/11/2009	

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003205009

**Project Name:** 

TVA-Ash Spill

pH:

7.40

pH Units

Sample Description: Sampler Project Name: TVA ash spill

**Date/Time Collected:** 

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

**Field Determinations** 

Dissolved Oxygen: 11.34

**Project Site No.:** 

Sampler's Name:

Conductivity: Temperature:

Other:

Flow:

175 10.06 uMHO

mg/L

**CFS** 

**Station No.:** 

CLINC004.5RO

12/10/2009 10:31

Geoff Klein

County:

**ROANE - 73** 

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** 

TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: TDEC-WPC TDEC-WPC

**Priority Date:** Date/Time Received: 12/20/2009

Received By:

12/10/2009 12:54

Ken Hitchman

TEST: Alkalinity, Total	ME.	METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	96	mg/L	3.8	10	M Chen	12/15/2009

TEST: Hardness, Calcium	ME.	METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	75	mg/L	0.7	1	M Chen	12/14/2009

TEST: Residue, Settleable	ME.	***				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/11/2009

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	48	mg/L	10	10	A Peeples	12/11/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit**